

## DEPARTMENT OF GENERAL SERVICES

## TELECOMMUNICATIONS DIVISION

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November 21, 1996

Mr. William F. Caton, Secretary  
Federal Communications Commission  
1919 M Street, NW  
Washington, DC 20554-0001

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Dear Mr. Caton:

The State of California herein submits an original and nine copies of its comments relative to the Sixth Further Notice of Proposed Rulemaking in the matter of MM Docket 87-268.

If you have any questions or require further information, please contact Mr. Glen Nash, Senior Engineer, at (916) 657-9454.

Sincerely,

PETE WANZENRIED  
Acting Deputy Director

PW:GSN:pr87-268.mem

Enclosures

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**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the matter of

Advanced Television Systems and  
Their Impact Upon the Existing  
Television Broadcast Service

MM Docket Number 87-268

To: The Commission

**Comments of  
The California Department of General Services  
Telecommunications Division**

to

**Sixth Further Notice of Proposed Rulemaking**

The California Department of General Services, Telecommunications Division (Division) is the primary agency responsible for the design, installation, and maintenance of land mobile radio communications systems used by the various state public safety agencies. The Division also is responsible for Federal Communications Commission licensing of all radio stations used by state agencies and for spectrum management. The State of California operates over 5,000 base stations to service over 43,000 mobile units, some of which operate in the UHF-TV/Land Mobile sharing spectrum at 470-512 MHz (TV Channels 14-20).

The proposed allocations for DTV stations would destroy all of the current land mobile operations permitted on TV Channels 14-20 in California, including vital public safety operations on those channels. For this reason, the State of California opposes the proposed DTV Allocation Table as published in the Sixth NPRM. In spite of the stated intent to provide 176 km (110 mile) separation between a DTV allocation and the city-center of the existing land mobile operation<sup>1</sup>, the proposed allocation table provides zero separation between DTV allocations and both of the land mobile channels in the San Francisco/Oakland metropolitan area<sup>2</sup>. It also provides zero separation between a DTV allocation and one of the land mobile channels in the Los Angeles metropolitan area<sup>3</sup>. Furthermore, the table provides significantly less than the 176 km separation for the remaining two land mobile channels in the Los Angeles area<sup>4</sup>. When coupled with the fact that existing land mobile operations are permitted anywhere within a 50-mile radius of the center of Los Angeles, the proposed DTV allocations in Corona and San

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<sup>1</sup> See Sixth Notice at paragraph 75

<sup>2</sup> Channels 16 and 17 are currently allocated for land mobile operations in the San Francisco/Oakland metropolitan area. An allocation on Channels 15 and 18 are proposed for DTV.

<sup>3</sup> Channel 20 is currently allocated for land mobile operations in the Los Angeles metropolitan area. An allocation on Channel 21 is proposed for DTV.

<sup>4</sup> Channels 14 and 16 are currently allocated for land mobile operations in the Los Angeles metropolitan area. An allocation on Channel 15 for DTV in Corona provides approximately 66 km separation and an allocation on Channel 19 for DTV in San Bernardino provides approximately 88 km separation.

Bernardino provide virtually zero separation. Thus, land mobile operations on both channels in the San Francisco area and on all three channels in the Los Angeles area would be destroyed. This simply is not acceptable to the citizens of California.

The Division understands the Commission's desire to provide service replication in making the new allotments, however, the proposed effective radiated power (ERP) levels might be viewed by some people as an unacceptable biologic hazard. This is particularly true at Mount Sutro in San Francisco where two stations are proposed at ERP levels exceeding 3.7 megawatts. The area immediately surrounding the Mount Sutro tower is a residential neighborhood which would be exposed to the long-term effects of these power levels.

The Division also is concerned about the intermodulation effects of placing several super high power digital television stations in close proximity to each other. The broadband nature of the DTV signal coupled with the likelihood of many metal-metal junctions which might be corroded will probably produce a multitude of intermodulation products. The high power levels for the DTV stations will serve only to exacerbate the intermodulation problem as the power levels of the intermodulation products increase.

The Division was an active participant in the Public Safety Wireless Advisory Committee (PSWAC) formed by the Commission and the National Telecommunications

and Information Administration (NTIA) to study the communications needs of public safety agencies through the year 2010. This committee identified an immediate critical need for 2.5 MHz of new spectrum to enhance interoperability amongst and between public safety agencies at all levels of government. The committee further identified a need for an additional 25 MHz of spectrum within the next 5 years and another 70 MHz of spectrum before 2010. The Division expects that most of this spectrum will come from reallocation of the current television broadcast spectrum. While the Division applauds the Commission's effort in this proceeding to improve the spectral efficiency of television allocations, it does not believe the effort has been aggressive enough.

For nearly fifty years, the television broadcast industry has operated on channels having 6 MHz of bandwidth. They have made few enhancements in the service provided and have steadfastly resisted any change to the channel bandwidth. In that same time period, other users of the spectrum have been forced to make continual changes designed to improve their spectral efficiency. It is time for the broadcasters to make similar improvements. In particular, the Division notes the new DTV standards will permit several standard definition TV (SDTV) signals to be carried over a single DTV channel. Since the Division does not believe every television station in an area will be able to afford and/or want to expend the money needed to convert their programming to high definition TV (HDTV), there will be many stations which will continue to transmit a standard definition TV signal. The Division believes the

Commission should require those stations to multiplex their individual programs onto a single DTV channel much as it requires current land mobile licensees to share channels. Not only would this save a significant amount of spectrum, but it would have the added benefit of reducing the operating costs for those stations, thereby making them more profitable. In particular, the Division does not believe stations should be permitted to implement SDTV on a portion of a DTV channel and use the remainder (or sell it off) for other non-broadcast services. The television industry does not own the spectrum, they were granted licenses to use a portion of the spectrum for the purpose of broadcasting television signals to the public. They should either use the spectrum for that purpose or return it for reallocation.

The Division also believes the Commission should evaluate the changing environment for broadcast services with an eye toward limiting the number of "over-the-air" broadcast stations. There has been a paradigm change in how the public receives entertainment services. There is an increasing availability of cable services throughout the country and we now see the emergence of direct broadcast satellite (DBS) services. However, there has not been a concomitant change in how "over-the-air" services are provided. The Commission should evaluate the future role of "over-the-air" broadcast stations to determine if there is sufficient demand for those services. As evidenced by the recent auctions, the radio spectrum is a valuable commodity. The Commission must ensure that it is used in the most effective manner.

The Division supports the comments submitted by the Association of Public Safety Officials-International, Inc. (APCO) and wishes to emphasize the need for additional spectrum below 512 MHz for land mobile (specifically public safety) use. California suffers from a significant shortfall in the availability of spectrum which is suitable for meeting the growing needs for public safety communications. This shortfall has reached critical levels in the Los Angeles and San Francisco/Oakland metropolitan areas and is felt in the San Diego, San Bernardino/Riverside, and Sacramento areas. State agencies, in particular, are unable to find adequate spectrum to meet their voice communications needs let alone implement the data services which are fast becoming the norm for public safety agencies<sup>5</sup>. Even outside of these five metropolitan areas, we are unable to find adequate spectrum which is common in all areas. It is not acceptable

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<sup>5</sup> The California Highway Patrol (CHP), in fact, is in serious jeopardy of losing their existing land mobile voice radio network. The CHP operates over 5,000 mobile units in the VHF Lowband portion of the spectrum (42 MHz). Motorola and Ericsson, the two largest manufacturers of land mobile equipment, have stopped making fixed equipment (base stations) in this band and have stated an intent to stop making mobile equipment. Most of the CHP radio equipment is nearing the end of its useful life. Not only is the CHP faced with an inability to add new features (such as data services), they are faced with increasing degradation in the performance of their existing voice network. There is no spectrum available in the Los Angeles and San Francisco metropolitan areas and no spectrum which is common throughout the remainder of the state on which they can build a replacement radio system. Thus, the new spectrum which might come from reallocation of current television broadcast spectrum is critical to the future viability of the California Highway Patrol's land mobile radio system and its support of the vital public safety role the CHP plays. For instance, TV Channel 15 currently is assigned only in San Diego, CA and Las Vegas, NV. This makes it an excellent candidate for satisfying the CHP's statewide requirement as it could be coupled with other UHF spectrum (which is available in those areas) to create a seamless, statewide radio system.

for a state user to be required to operate on VHF Highband (150-174 MHz) channels in one area, on UHF (450-470 MHz) channels in another area, and 800 MHz channels in a third area. State agencies need access to a common segment of the radio spectrum throughout the state. That includes the five metropolitan areas as well as the most rural areas of the state. The California Highway Patrol, for instance, has jurisdiction along all of the interstate and state highways in California. They also have jurisdiction on all roadways in the unincorporated areas of the state. Thus, their area of jurisdiction quite literally covers the entire 158,000 square mile area of California. They must be capable of sending officers from one area of the state to any other area on a moments notice in response to emergent situations. Other state agencies have similar requirements. The California Department of Forestry and Fire Protection, for instance, deploys men and equipment all over the state in response to wildland fires. Some of these fires require the services of one thousand or more firefighters to quell.

The Division has evaluated the spectrum in Channels 60-69 for possible land mobile use. While we concur with APCO's evaluation that it has some usefulness to the public safety community as a whole, we see no value in this spectrum for meeting our needs. First, we note the allocation table proposes DTV channels within California on six of the ten channels. Thus, none of the channels could be used on a statewide basis when co-channel and adjacent channel situations are considered. Second, these channels fall between 746 MHz and 806 MHz. Based on our experiences in building



800 MHz land mobile systems, use of this frequency band would require a prohibitive number of base stations to provide the level of coverage needed<sup>6</sup>. Third, we note the frequency spread from the bottom of this spectrum (746 MHz) to the top of the current 800 MHz band (869 MHz) is likely to result in the manufacturers producing two separate radios. Thus, rather than being an extension of the current 800 MHz, this new spectrum may become the fifth major public safety band, thereby further complicating the interoperability problem currently faced by public safety agencies<sup>7</sup>.

Ideally, new spectrum for public safety use would be found in the VHF Highband portion of the band (i.e. TV Channels 7 and 8) and/or the UHF portion of the band (i.e. TV Channels 14-20). These two segments of spectrum are immediately adjacent to existing public safety allocations, thus offering the greatest potential for enhancing interoperability with existing systems. They also offer good propagation characteristics

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<sup>6</sup> The area along California's coastline between San Francisco and the Oregon border is particularly hostile to 800 MHz systems due to heavy evergreen forests coupled with frequent fog and rain. In other areas of California, such as the Mojave Desert, propagation at 800 MHz is a problem due to the distances involved.

<sup>7</sup> Currently, public safety agencies operate in the VHF Lowband (30-50 MHz), the VHF Highband (150-174 MHz), the UHF band (450-470 MHz), and the 800 MHz band (806-824 MHz and 851-869 MHz). An agency operating in the UHF band is unable to communicate effectively with an agency operating in the 800 MHz band or any other band. This inability to communicate directly with other public safety agencies has caused significant problems in responding to emergent situations such as the Oklahoma City bombing, the Oakland Hills (CA) fire, the "Rodney King" riots, and numerous other incidents.

while maintaining reasonable antenna sizes for the portable radios used by most public safety personnel. The Division strongly urges the Commission to remove Channels 7 and 8 and Channels 14 through 20 from the core DTV spectrum.

The Division recommends the Commission define the core DTV spectrum as being Channels 2-5, Channels 9-13, and Channels 21-56. This would enhance the ability of stations to convert to DTV while maintaining their service areas without necessitating the high power levels proposed in the allocation table. Channel 6 could then be designated for connection of VCR's and other devices, thereby resolving the interference problems with the current FM broadcast band without wasting two channels (3 and 4) for this spectrally questionable function. Then a 2.5 MHz portion of TV Channels 7 and 8 could be channelized to provide the "Interoperability" band proposed in the PSWAC report with the remainder allocated for public safety use at all levels of government (including Federal agencies)<sup>8</sup>. TV Channels 14-20 would be made available for public safety use as would some portion of TV Channels 60-69 as the means of further satisfying the needs identified in the PSWAC report.

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<sup>8</sup> While this spectrum would be preferable for a statewide operation such as that for the California Highway Patrol (thus, negating the need for Channel 15 as proposed in Note 5), there are several television stations on each channel within the state. Thus, it would take a greater effort to clear this spectrum for the CHP, probably requiring a timeframe which would not satisfy their needs to move out of the VHF Lowband spectrum.

In conclusion, this proceeding is an issue of spectrum use. The Commission must consider the greater issues before it relative to the use of the radio spectrum, not restrict itself to one group of users. We strongly urge the Commission consider all uses of the radio spectrum and the alternatives available to each user group, then determine the relative value of those uses and allocate spectrum in the manner which makes the best use of this limited national resource. The State of California has been the victim of past Commission decisions to reallocate spectrum to other uses<sup>9</sup> thus, we know it is within the Commission's power and ability to make those decisions. We ask the Commission to consider the desperate needs of public safety agencies (particularly wide area users such as state agencies) and reallocate a portion of this television spectrum for public safety land mobile services.

Respectfully submitted,



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<sup>9</sup> Loss of the 12 GHz spectrum currently used by Direct Broadcast Satellite services and loss of the 2 GHz spectrum currently being allocated to PCS and other services.